19B

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

RCRA Corrective Action
Environmental Indicator (EI) RCRIS Code (CA725)

Current Human Exposures Under Control

Facility Name: Lenox China, a Division of Lenox Incorporated
Facility Address: Tilton Road, Pomona, New Jersey 08648
Facility EPA ID #: NJD002325074

1. *Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?*

X *If yes - check here and continue with #2 below.*

____ *If no - re-evaluate existing data, or*

____ *if data are not available skip to #6 and enter"IN" (more information needed) status code.*

BACKGROUND

- **Facility Description**

References:

- RCRA Facility Assessment (RFA) Report for Lenox China, Tilton Road, Pomona, New Jersey, March 1989.
- Supplemental Information, Solid Waste Management Units, Lenox China, Pomona, New Jersey, September 1990.
- Letter dated October 8, 1987 from A.J. Gustray, Director of Lenox to Kenneth Goldstein, NJDEP, "Re: Underground Storage Tanks, Lenox China Pomona Plant."
- Polishing Basin Closure/Post-Closure Plan, Lenox China, Pomona, New Jersey, Project #530-1, June 1992, Revised July 1992.
- Letter dated November 12, 1993 from James M. Barish, Eder Associates Consulting Engineers, P.C. to Frank Faranca, NJDEP, "Re: Polishing Basin Closure, Lenox China Facility."
- Facility Background Report, RCRA Facility Investigation Task I Report, February 1993.
- Letter dated August 18, 1993 from Stephen K. Lichtenstein, Senior Vice President of Lenox to Frank Faranca, NJDEP, "Re: Report of Potential Solid Waste Management Unit or Area of Concern."
- Lenox Incorporated Remedial Action Work Plan (South Site) dated October 16, 1996
- South Site Remediation, Finding/Remedial Action Report, Lenox China, Pomona, Atlantic

store waste glaze material consisting of clay, lead carbonate, and fritted lead.

- SWMU 11 (Slip Basin): The basin, a RCRA-regulated hazardous waste unit, was used to store clay waste material from 1954 to 1970 and process wastewater consisting clay, lead carbonate, fritted lead, and silica from 1970 to 1981. It also received process wastewater and was used to provide surge capacity for the wastewater treatment plant from 1981 to 1987.
- SWMU 12 (Drum Storage Area): It was used to store drums containing hazardous wastes before they were sent off-site for disposal. It also stored containers containing a TCE product solvent.
- Area of Concern (AOC) 13 (Area between Monitoring Well #10 and Aloe Street): Soil sampling revealed the presence of discolored surficial soils and subsequent investigations found slip waste in the area.
- SWMU 14 (Two Neutralization Tanks): The two 3,750 gallons fiberglass tanks were used to store non-hazardous treated glaze wastewater prior to discharge to the sanitary sewer system. They were removed from service in March 1994 but have been in operation since the reactivation in April 1995.
- SWMU 15 (Filter Press): The five foot by two foot cast iron press has been used to dewater glaze sludge since 1987.
- SWMU 16 (Precious Metal Incinerator): It was used to reclaim precious metals, principally gold, from rags used during the decorating process.
- SWMU 17 (South Site): It was utilized to store waste plaster molds and broken ware from approximately 1954 to the late 1970s. Contaminated soil was excavated and disposed of off-site.

- **Definition of Environmental Indicators (for the RCRA Corrective Action)**

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EIs developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

- **Definition of "Current Human Exposures Under Control" EI**

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

__X__ *If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.*

____ *If unknown (for any media) - skip to #6 and enter "IN" status code.*

References:

- Summary Report of the Investigation of Trichloroethene in Groundwater and Proposed Groundwater Remediation System, Lenox China Facility and Adjacent Area, Pomona, New Jersey, Volumes I, II, & III, August 1990.
- Groundwater Corrective Action System Semi-Annual Report, January - June 1992, November 1992.
- Pomona TCE Quarterly & Semi-Annual Groundwater Monitoring Reports
  - November 1994 Monitoring Round dated January 1995.
  - May 1995 Monitoring Round dated July 1995.
  - November 1995 Monitoring Round dated February 1996.
- TCE Quarterly Groundwater Monitoring Reports dated April 1995, November 1995, May 1996, September 1996, March 27, 1998, June 1998, September 30, 1998, December 23, 1998, March 26, 1999, June 15, 1999, September 27, 1999, and December 22, 1999.
- RCRA Facility Investigation Report (June 1994) and its Addendum (December 1994).
- The Johnson-Ettinger Model (1991) for Subsurface Vapor Intrusion into Building by Paul Johnson & Robbie Ettinger (available at the web site, www.epa.gov/superfund/programs/risk/airmodel/johnson_ettinger.htm).

Rationale:

Groundwater: There were releases of inorganics from the Sludge Disposal Area, the Waste Pile, the Glaze and Slip Basins and the Area between Well #10 and Aloe Street. The inorganic constituents are contained within the facility boundary. TCE was released into the groundwater from the Degreaser Sludge Pit and the Drum Storage Area and have migrated off-site. A pump and treat system was installed in 1991 to collect the contaminated groundwater and to mitigate further off-site migration of TCE. The TCE Quarterly Groundwater Monitoring Reports demonstrate that the pump and treat system has been effectively preventing migration of the TCE groundwater plume beyond Whitehorse Pike (the outer limit of the Classification Exception Area (CEA)). See groundwater and TCE concentration (isopleth) maps in the referenced reports.

3. *Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?*

Summary Exposure Pathway Evaluation Table

	*Potential **Human Receptors** (Under Current Conditions)*						
"Contaminated" Media	*Residents*	*Workers*	*Day-Care*	*Construction*	*Trespassers*	*Recreation*	*Food*[3]
Groundwater	Yes	No	No	No	No	No	Yes
Air (indoor)	X	X	X	X	X	X	X
Soil (surface, e.g., <2 ft)	No	No	No	No	No	No	No
Surface Water	X	X	X	X	X	X	X
Sediment	X	X	X	X	X	X	X
Soil (subsurface e.g., >2 ft)	No	No	No	No	No	No	No
Air (outdoor)	X	X	X	X	X	X	X

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors' spaces for Media which are not "contaminated" as identified in #2 above.

2. enter "yes" or "no" for potential "completeness" under each "Contaminated" Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential "Contaminated" Media - Human Receptor combinations (Pathways) do not have check spaces ("___"). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

____ *If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).*

__X__ *If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.*

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[3] Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

- AOC 13 (Area between Monitoring Well #10 and Aloe Street): The area has been fenced to prohibit unauthorized access.

4. *Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **"significant"**[4] (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?*

   X *If no (exposures cannot be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant."*

   ____ *If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant."*

   ____ *If unknown (for any complete pathway) - skip to #6 and enter "IN" status code*

Rationale:
Groundwater: The domestic wells which are potentially impacted by onsite TCE-contaminated groundwater are located close to the 1 ppb TCE groundwater isopleth, indicating that groundwater at these wells have TCE concentrations close to 1 ppb. The EPA Maximum Contaminant Level (MCL) of 5 ppb for TCE is protective of the public health for long-term water consumption. By comparison, the risk associated with exposure secondary to irrigation usage (vapor inhalation, dermal contact and produce consumption) of TCE contaminated water at approximately 1 ppb is expected to be negligible.

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[4] If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training and experience.

Completed by: _____ Date 7/14/00

Andrew Park, Project Manager
RCRA Programs Branch
EPA Region 2

_____ Date 7/14/00

Barry Tornick, Section Chief
RCRA Programs Branch
EPA Region 2

Approved by: _____ Date 8/24/00

Raymond Basso, Chief
RCRA Programs Branch
EPA Region 2

Locations where References may be found:

U.S. Environmental Protection Agency Region 2
RCRA Records Center
290 Broadway, 15th Floor
New York, New York 10007-1866

New Jersey Department of Environmental Protection
Bureau of Case Management
401 East State Street
Trenton, New Jersey 08625

Contact telephone and e-mail numbers

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FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.

Attachment 1

Johnson-Ettinger Model (1991) -
Derivation of Health Risks Potentially Imposed by TCE-Contaminated Groundwater

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

VERSION 1.2
September, 1998

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C~W (microg/L)	Chemical
79016	10	Trichloroethylene

ENTER Depth below grade to bottom of enclosed space floor, L~F (15 or 200 cm)	ENTER Depth below grade to water table, L~WT (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T~S (^oC)
200	300	SC	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k~v (cm^2)	ENTER Vadose zone soil dry bulk density, rho~b^V (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, theta~w^V (cm^3/cm^3)
SCL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	ENTER Averaging time for carcinogens, AT~C (yrs)	ENTER Averaging time for noncarcinogens, AT~NC (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
1.0E-006	1	70	30	30	350

Used to calculate risk-based groundwater concentration.

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (microg/L)	Indoor exposure groundwater conc., noncarcinogen (microg/L)	Risk-based indoor exposure groundwater conc., (microg/L)	Pure component water solubility, S (microg/L)	Final indoor exposure groundwater conc., (microg/L)
NA	NA	NA	NA	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
3.2E-008	NA

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

VERSION 1.2
September, 1998

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C~W (microg/L)	Chemical
79016	10	Trichloroethylene

ENTER Depth below grade to bottom of enclosed space floor, L~F (15 or 200 cm)	ENTER Depth below grade to water table, L~WT (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T~S (^oC)
200	300	SC	10

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k~v (cm^2)	ENTER Vadose zone soil dry bulk density, rho~b^V (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, theta~w^V (cm^3/cm^3)
SCL			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	ENTER Averaging time for carcinogens, AT~C (yrs)	ENTER Averaging time for noncarcinogens, AT~NC (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
1.0E-006	1	70	25	25	250

Used to calculate risk-based groundwater concentration.

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (microg/L)	Indoor exposure groundwater conc., noncarcinogen (microg/L)	Risk-based indoor exposure groundwater conc., (microg/L)	Pure component water solubility, S (microg/L)	Final indoor exposure groundwater conc., (microg/L)
NA	NA	NA	NA	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
1.9E-008	NA

Attachment 2

SWMU Map

LEGEND

- ○ ⊕ Piezometer/Monitoring Well
- ⊕ Recovery Well
- ⊛ Supply Well
- ⊞ Soil Boring
- X Surface Water Sample
- △ Proposed Sediment Sample
- 453 2 Block & Lot Number
- ---------- Property Boundary

SOLID WASTE MANAGEMENT UNITS	
NUMBER	DESCRIPTION
1	DEGREASER SLUDGE PIT
2	SLUDGE DISPOSAL AREA
3	WASTE PILE
4	POLISHING BASIN
5	TILTON ROAD POND
6	UNDERGROUND EFFLUENT TRANSFER PIPE
7	EQUALIZATION SUMP
8	WASTEWATER TREATMENT PIPING
9	UNDERGROUND STORAGE TANKS
10	GLAZE BASIN
11	SLIP BASIN
12	DRUM STORAGE AREA
13	AREA BETWEEN MW-10 AND ALOE STREET
14	TWO TANKS (NEUTRALIZATION)
15	FILTER PRESS
16	PRECIOUS METALS RAG INCINERATOR

NOTES

1. Surrounding Land Use: North Of Plant – Dense Vegetation
   South Of Plant – Dense Vegetation
   East Of Plant – Commercial
   West Of Plant – Dense Vegetation (Residential/Commercial)
2. Site Map Shows All Wells On Lenox Property. Off-Site Wells Are Shown On Figure 1.
3. Regional Groundwater Flow Is East-Northeast.

No.	REVISIONS	DATE	BY

REMEDIAL ACTION WORK PLAN

LENOX CHINA
POMONA, NEW JERSEY

eder associates consulting engineers, p.c.
NEW YORK WISCONSIN MICHIGAN GEORGIA FLORIDA NEW JERSEY

PROJECT
REMEDIAL ACTION WORKPLAN
LENOX CHINA
POMONA, NEW JERSEY

TITLE
LOCATION OF SWMUs, AOC,PHASE 1 SOIL BORINGS, AND MONITORING WELLS

eder associates consulting engineers, p.c.
LOCUST VALLEY, NEW YORK • MADISON, WISCONSIN
ANN ARBOR, MICHIGAN • AUGUSTA, GEORGIA
JACKSONVILLE, FLORIDA • TRENTON, NEW JERSEY

DRAWN BY AFG	SCALE 1"=150'
DESIGNED BY JMB	PROJECT No. 530-7
APPROVED BY JMB	DRAWING No. 1
DATE MARCH, 1995	

530-7C
033095